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U.S. Department of  
Transportation

Office of the Secretary  
of Transportation

400 Seventh St., S.W.  
Washington, D.C. 20590

DEC 22 1993

Mr. Donald Phillips  
Assistant U.S. Trade Representative for  
Industry  
Office of The U.S. Trade Representative  
Room 422  
600 17th Street, N.W.  
Washington, D.C. 20005

Dear Mr. Phillips:

As you requested, the Working Group on Information (WGI) for the Subcommittee on Commercial Launch Services recently completed its review of the APStar-1 and ASIASEAT-2 commercial launch competitions, both won by the People's Republic of China (PRC) in 1993. The findings and preliminary recommendations of the WGI are summarized in the enclosed report, which incorporates information obtained from the PRC delegation during the November 1993 consultations, as well as the results of additional research conducted since that time.

Please let me know if I can be of further assistance on this matter.

Sincerely,

*Frank C. Weaver*

Frank C. Weaver, Director  
Office of Commercial Space Transportation

Enclosure

## **Status of Commercial Space Transportation Market--1993**

### **I. OVERVIEW**

The international commercial market for medium-to-large communication satellite launches remains stable at approximately 12 to 15 per year (on average), roughly split between United States companies and Arianespace, though with increasing activity by the Peoples' Republic of China. The Launch Manifest released by the U.S. Department of Transportation (DOT) in April contains five commercial launches of medium-to-large payloads scheduled or already conducted for 1993. These include two launches of communications satellites and three launches of commercially-procured government payloads. The launches are together expected to generate revenues of more than \$300 million.

DOT also projects six commercial launches of small launch vehicles for 1993: two suborbital rockets carrying small research payloads; two launches of small remote sensing satellites; the launch and reentry of NASA's Commercial Experiment Transporter (COMET) vehicle, which will be used for microgravity experiments that remain in orbit for approximately one month and then return to a landing site on earth; and a small LEO communications satellite. These launches will generate approximately \$60 million in revenues.

### **II. INTERNATIONAL LAUNCH INDUSTRY**

The international launch industry consists of six major providers of commercial launch services for medium-to-large payloads. U.S. firms offering services on large launch vehicles include General Dynamics, Martin Marietta and McDonnell-Douglas, while small launch vehicles are (or will soon be) provided by E.E.R. Systems, Conatec, Orbital Sciences Corporation, American Rocket Company, LTV Missiles and Space, SEALAR Corporation, CTA Inc., and PacAstro. The last company is an addition to the list provided in October of 1992.

The PRC offers the Long March family of vehicles and has contracts to launch the Optus B3 (replacement), INTELSAT VIIA, Afristar 1, Asia Pacific, and ASIASESAT-2 satellites.

Russia is also emerging as a participant in the international launch market. The United States decided in 1992 to consider favorably a decision by the INMARSAT Organization to launch one of the INMARSAT 3 satellites on a Proton vehicle in the 1995-96 time frame. This contract was originally considered a one-time exception to standing U. S. policy. Since that time, however, the U.S. and Russian Governments have signed an agreement allowing Russian launch providers to compete for launches of U.S.-built satellites in the international market for commercial launch services. [The agreement contains a limit on the maximum number of launch contracts allowed during the period of the agreement and provisions requiring that Russian launch prices be comparable to

those prevailing in the international market]. Russia has a family of launch vehicles to offer to the international payload community.

Japan's space launch program is also continuing to evolve, although the previously planned 1993 date for first launch of their H-2 launch vehicle has slipped by one year to 1994.

The leaders in the international market continue to be Arianespace, with over 50% of the market share, followed by McDonnell Douglas and General Dynamics. Orbital Sciences Corporation is considered the world leader in the small launch services provider class (to Low Earth Orbit, or LEO). If the remaining 1993 launches take place as scheduled, the total number of internationally competed launches for the year will be 8: Ariane 6, Delta 1; and Atlas I. The number will be slightly less than the annual average due to schedule slippages and the Atlas launch failures in late 1992 and early 1993.

U. S. firms providing launch services for medium and large satellites charge between \$40 and \$115 million or more per launch, depending on the launch vehicle and the size of the payload.

### III. INTERNATIONAL LAUNCH MARKET

Although demand for launch services for medium-to-large payloads appears to have leveled off during the past year, the situation could change. Planned constellations of small, low earth orbit (LEO) satellites will increase the demand for launch services. If Direct Broadcast Satellites become more commercially viable, demand will be further stimulated. Forecasts for increases in total worldwide demand for geostationary satellite launches range as high as 20 per year.

A growing segment of the space transportation industry is based on small launch vehicles. Small launch vehicles serve the market for relatively light-weight payloads (up to 2,000 pounds to LEO), or suborbital flights. These payloads will consist of telecommunications satellites and microgravity experiments. Demand for small launch vehicle services is expected to grow significantly during the next several years as planned networks of LEO telecommunications satellites begin to be developed.

Increases in commercial demand for launch services, particularly for medium-to-large satellites, will occur in an environment of active international competition, with new or improved launch vehicles offered by the European Space Agency, U. S. companies, Japan, the PRC, and Russia.

The coming year will see the latest form of commercial space transportation in the form of reentry vehicles. The first is the previously mentioned COMET, scheduled for launch and recovery. A substantial market for recoverable microgravity experiments is predicted by the turn of the century.

#### IV. INTERNATIONAL SATELLITE MARKET

Commercial communications satellites continue to be the dominant sector of the U. S. space industry. Production of complete COMSAT systems produced revenues of \$2.6 billion in 1991, up seven percent from the previous year.

U. S. satellite manufacturers produced nine satellites in 1991 valued at \$1.3 billion. Sales revenues were level with the previous year but are expected to increase significantly during the next two years, with 12 U.S. satellites scheduled for delivery in 1993, and 13 on order for 1994. Satellites scheduled for delivery between 1992 and 1997 by U. S. companies include 22 for domestic customers, 12 for INTELSAT OR INMARSAT, 18 for foreign customers; and 5 for U. S. private international systems. This trend will continue through the 1990s, as U. S. satellite operators and international satellite consortia launch new satellites to replace those reaching the end of their design life, as well as to expand existing systems.

Small satellites are projected to be an expanding sector of the market (smallsats weigh less than 2000 pounds and carry less than 12 transponders). The satellite applications originally pending before the FCC proposed to build well over 270 smallsats amounting to over \$4 billion in expenditures in the next five years (if all were to go forward). Thus far, three of these applicants have been granted authorization to proceed with experimental development and testing, and more may receive authorization as the process and corporate plans evolve. Regardless, the smallsats constitute a potentially large market for U. S. satellite manufacturers, and consequently many potential launches. However, none of these plans will be implemented until the mid- to late 1990s, and substantial revenues are not expected in the near term.

#### V. CONCLUSION

The space transportation market remains thin. The number of launches of large satellites is expected to remain stable at current levels, but the number of launch services providers is increasing. It is essential that participants in the international market support the application of market principles to international competition in the provision of launch services, including avoidance of unfair trade practices. Otherwise, disruption can occur that would have profound and lasting negative impacts on the international commercial space transportation market.